

## Self-controlled case-series study to verify the effect of adherence to Beta-blockers in secondary prevention of myocardial infarction

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### *Abstract*

#### **BACKGROUND:**

Beta-blockers (BB) are recommended in secondary prevention of acute myocardial infarction (AMI), but adherence to prescription medication is a recognized problem. Most literature on the consequences of poor adherence to prescribed BB is limited by the possibility of "healthy adherer bias" and better-designed studies have been advocated.

#### **METHODS AND RESULTS:**

We investigated the association between adherence to BB prescription and risk of subsequent AMIs using the self-controlled case series design, which allows improved control of interpersonal confounding, being based on intrapersonal comparisons. From all the 30 089 patients hospitalized for AMI in the years 2009-2011 in an Italian region we selected those that suffered subsequent AMIs at days 31 to 365 from discharge (1328), and then the 1207 that had at least one BB prescription collected at any of the regional pharmacies. Using information on prescriptions, each individual's observation time was then divided into periods exposed or unexposed to BB and the relative AMI incidence rate ratios (IRR) of BB exposure were estimated by conditional Poisson regression. The IRR (rate of recurrent AMI in exposed versus unexposed periods) was 0.79 (95% CI 0.69 to 0.90,  $P=0.001$ ). Various sensitivity analyses confirmed the robustness to possible failure of assumptions, ie, considering only first recurrences (IRR 0.76, 95% CI 0.66 to 0.88,  $P<0.001$ ), excluding cardiovascular fatalities (IRR 0.76, 95% CI 0.65 to 0.89,  $P<0.001$ ), and excluding individuals with long hospital admissions (IRR 0.60, 95% CI 0.43 to 0.83,  $P=0.002$ ).

#### **CONCLUSIONS:**

Adherence to recommended BB therapy was associated with a 20% reduction of recurrent AMIs, consistently with previous research, but with decreased concerns about healthy-adherer bias.